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Title: MONITORING OF ABSOLUTE CEREBRAL OXYGEN SATURATION (FORE-SIGHT TECHNOLOGY) DURING ENDOSCOPIC SHOULDER SURGERY : BENCHCHAIR POSITIONING COMPARED TO CONVENTIONAL POSITIONING

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Background and Goal of Study: (required): Recent technical developments in endoscopic shoulder surgery require benchchair positioning of the patient to provide better surgical conditions. Besides, optimal surgical visualization often requires the use of induced arterial hypotension. Combining benchchair positioning with induced hypotension may not be without any consequence for the maintenance of adequate cerebral perfusion. The FORE-SIGHT absolute cerebral oximeter, a recently introduced monitoring device, uses 4 wavelengths to determine absolute cerebral oxygen saturation (SctO₂). In this paper, we wanted to report on the changes in absolute SctO₂ occurring during endoscopic shoulder surgery, comparing benchchair positioning (BP) to conventional (side) positioning (CP).

Materials and Methods: (required): Twenty-eight pts scheduled for endoscopic shoulder surgery were included. Benchchair positioning was preferred in 12 pts, while conventional (side) positioning was used in the other 12 pts. All procedures were performed under general anesthesia. After induction of anesthesia, and before positioning of the patient, bilateral SctO₂ monitoring was started (sensors applied bilaterally over patient's forehead). Validation studies proved a stable correlation between SctO₂ and jugular bulb saturation (SjO₂) with SctO₂ 10% higher than SjO₂. As it is accepted that SjO₂ has a normal safe limit of 45%, the absolute Fore-Sight SctO₂ threshold is estimated to be approximately 55%.

Results and Discussion: (required): Mean SctO₂%, before change in body position, was not different between both groups (BP : 73.6% vs CP : 73.7%). Benchchair positioning resulted in a significant and almost immediate decrease (m17.2%) in bilateral SctO₂ in all pts. There was no difference in mean arterial blood pressure during procedure between BP and CP pts, but a significantly longer procedure time was observed in BP pts compared to CP (m190min vs 60min). SctO₂ monitoring during procedure (with systolic blood pressure between 80 - 90mmHg) revealed absolute SctO₂ values below 55% in 12 of 14 BP patients, while SctO₂ values below 55% were observed in no CP patient. Normal positioning at the end of procedure resulted in SctO₂ values returning to baseline values in both groups.

Conclusion(s): (required): Non-invasive monitoring of absolute cerebral oxygen saturation might offer new insights in the management of pts positioned in benchchair position for shoulder surgery. Especially, the combined use of induced hypotension and this positioning could result in sometimes dangerous reductions in the adequacy of cerebral perfusion.